

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
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SRM Number: 924a
MSDS Number: 924a
SRM Name: Lithium Carbonate

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Description: This Standard Reference Material (SRM) is intended for use as a chemical of known purity. It is intended primarily for use in the calibration and standardization of procedures employed in clinical analysis and for the routine critical evaluation of the daily working standards used in these procedures. A unit of SRM 924a is supplied in crystalline form as a 30 g unit.

Substance: Lithium Carbonate

Other Designations: Carbonic acid, lithium salt; carbonic acid, dilithium salt; dilithium carbonate.

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component:	Lithium Carbonate
CAS Number:	554-13-2
EC Number (EINECS):	209-062-5
Nominal Mass Fraction (%):	100
EC Classification:	Xn (Harmful); not classified in Annex I of Directive 67/548/EEC
EC Risk:	R22 (harmful if swallowed) R36/37/38 (irritating to eyes, respiratory system and skin) R41 (risk of serious damage to eyes)
EC Safety:	S23 (do not breathe fumes) S24/25 (avoid contact with skin and eyes) S45 (in case of accident or illness, see doctor; show label)

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0-4): Health = 2 Fire = 0 Reactivity = 0

Major Health Hazards: Irritating to skin, eyes, GI tract, and respiratory system. High-level exposure may damage the central nervous system, lungs, kidneys, or other organs.

Physical Hazards: None documented; container may shatter.

Potential Health Effects

Inhalation: This material may irritate the upper respiratory tract. Symptoms include coughing, shortness of breath, and chest pain. Prolonged or repeated exposure may cause pulmonary edema.

Skin Contact: May cause skin irritation with redness and pain. Sensitization may occur.

Eye Contact: May cause eye irritation with redness and pain.

Ingestion: May irritate the GI tract, causing abdominal pain, nausea, vomiting, and diarrhea. A large dose may have temporary or permanent effects on the central nervous system, ranging from apathy and drowsiness to coma. The heart, kidneys, thyroid gland, and other organs may also be affected.

Medical Conditions Aggravated by Exposure: Allergies affecting the skin; any conditions affecting the central nervous system, kidneys, thyroid gland, or other target organs.

Listed as a Carcinogen/ Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	_____	<u>X</u>
In the International Agency for Research on Cancer (IARC) Monographs	_____	<u>X</u>
By the Occupational Safety and Health Administration (OSHA)	_____	<u>X</u>

Note: This material is a suspected carcinogen, although it is not presently listed as such.

4. FIRST AID MEASURES

Inhalation: Move the person to fresh air immediately. Qualified medical personnel may start CPR or give oxygen if necessary. Get medical aid at once, and bring the container or label.

Skin Contact: Remove contaminated clothing and shoes. Flush affected skin with water for at least 15 minutes, then wash thoroughly with soap and water. If skin irritation persists, get medical aid and bring the container or label. Wash contaminated clothing before reusing.

Eye Contact: Remove contact lenses (if any). Do not allow victim to rub eyes or keep eyes closed. Flush eyes with large amounts of running water for at least 30 minutes, keeping eyelids open and raising lids to remove all chemical. Get medical aid at once, and bring the container or label.

Ingestion: Contact a poison control center immediately for instructions. Wash out mouth with water, but do not induce vomiting. Get medical aid at once, and bring the container or label.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: This material alone is a negligible fire hazard, but it will ignite and burn when in contact with fluorine.

Extinguishing Media: Use extinguishing media appropriate to the surrounding fire, such as water spray, carbon dioxide, dry chemical, or foam. Cool containers from maximum distance using water spray.

Fire Fighting: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): N/A

Autoignition (°C): N/A

Lower Explosive Limit (LEL): N/A

Upper Explosive Limit (UEL): N/A

Flammability Class (OSHA): N/A

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Isolate the spill area and remove any sources of ignition. Cleanup personnel must wear personal protective equipment (Section 8). Sweep up material and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Provide ventilation.

Disposal: Refer to Section 13, Disposal Considerations.

7. HANDLING AND STORAGE

Storage: Store this material in the original container at room temperature. Protect from moisture, heat, and physical damage, and isolate from incompatible materials.

Safe Handling Precautions: Wear a dust mask or respirator. Avoid contact or wash after handling.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: None established. Exposure limits for total nuisance dust:

ACGIH TLV-TWA: None established. Total dust, 10 mg/m³; respirable dust, 3 mg/m³

OSHA TLV-TWA: None established. Total dust, 15 mg/m³; respirable dust, 5 mg/m³

UK WEL: None established. Total inhalable dust, 10 mg/m³; respirable dust, 4 mg/m³

Ventilation: Use local or general exhaust to keep employee exposures below limits. Local exhaust ventilation is preferred because it can control contaminant emissions at the source, preventing dispersion into the general work area. Refer to the ACGIH document *Industrial Ventilation, a Manual of Recommended Practices*.

Respirator: If necessary, refer to the NIOSH document *Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84* for selection and use of respirators certified by NIOSH.

Eye Protection: Use chemical safety goggles where dusting or splashing of solutions may occur. See OSHA standard (29 CFR 1910.133) or European Standard EN166. The employer should provide an emergency eye wash fountain and safety shower in the immediate work area.

Personal Protection: Wear appropriate gloves and protective clothing to prevent contact with skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: Lithium Carbonate

Appearance and Odor: White powder, odorless

Relative Molecular Weight: 73.89

Molecular Formula: Li₂CO₃

Density (g/cm³): 2.11

Solvent Solubility: Insoluble in acetone, ethanol, ammonia; soluble in acid

Water Solubility: 1.5% @ 0°C (32°F)

Boiling Point (°C): 1310 (2390°F), decomposes

Melting Point (°C): 723 (1333°F)

pH: 11.2 (1% aqueous solution)

10. STABILITY AND REACTIVITY

Stability: ☒ Stable ☐ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Dust generation; contact with incompatible materials.

Incompatible Materials: Acids (will release carbon dioxide gas); fluorine and other halogens, metals.

Fire/Explosion Information: See Section 5.

Hazardous Decomposition: Thermal decomposition of this material will produce oxides of carbon and lithium.

Hazardous Polymerization: ☐ Will Occur ☒ Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: ☒ Inhalation ☒ Skin ☒ Ingestion

Toxicity Data:

Man, oral: $TD_{Lo} = 54 \text{ mg/kg}$

Woman, oral: TD_{Lo} (10 days intermittent) = 120 mg/kg

Rat, oral: $LD_{50} = 525 \text{ mg/kg}$

Target Organ(s): Respiratory tract, GI tract, skin, eyes, nervous system, heart, kidneys, thyroid gland.

Mutagen/Teratogen: Lithium carbonate is a possible mutagen and reproductive effector.

Health Effects: See Section 3.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:

Mummichog (fish, *Fundulus heteroclitus*): LC_{50} (72 hrs) = 39,000 $\mu\text{g/L}$

Carp (*Cyprinus carpio*): Mortality (68 hrs, endpoint not reported) = 244–427 mg/kg

Environmental Summary: This material is slightly toxic to aquatic life. Do not release to the environment.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of container and unused contents in accordance with federal, state, and local requirements, which vary according to location. Although this material is not a listed RCRA hazardous waste, it may exhibit one or more characteristics of a hazardous waste and thus requires appropriate analysis to determine specific disposal requirements. Processing, use, or contamination of this product may change the waste management options.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated

SARA Title III Section 302: Not regulated

SARA Title III Section 304: Not regulated

SARA Title III Section 313: Regulated

OSHA Process Safety (29 CFR 1910.119): Not regulated

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	Yes
CHRONIC:	No
FIRE:	No
REACTIVE:	No
SUDDEN RELEASE:	No

STATE REGULATIONS

California Proposition 65: Regulated

CANADIAN REGULATIONS

WHMIS Classification: D2B (toxic)

WHMIS Ingredient Disclosure List: Not regulated

EUROPEAN REGULATIONS

EU/EC Classification: Xn (Harmful); not classified in Annex I of Directive 67/548/EEC

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed

TSCA 12(b), Export Notification: Not listed

16. OTHER INFORMATION

Sources:

IUCLID Chemical Data Sheet: Lithium Carbonate, 18 October 2000.

PAN Pesticides Database: Lithium Carbonate.

U.S. National Institute for Occupational Safety and Health, *NIOSH Pocket Guide to Chemical Hazards*, September 2005 edition. DHHS (NIOSH) Publication No. 2005-151.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.